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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,585	10/12/2001	Chien-Tzu Hou	1981010	2750

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Keith Kline
Pro-TECHTOR International Services
20775 Norada Court
Saratoga, CA 95070-3018

EXAMINER

TRIMMINGS, JOHN P

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,585

Applicant(s)

HOU ET AL.

Examiner

John-P Trimmings

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 1-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-11 are presented for examination.

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: It does not identify the citizenship of each inventor.

Drawings

1. The drawings are objected to because FIG.2 references 120 as a "comparater", but should be spelled "comparator". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because the lines are not double-spaced or numbered. Correction is required. See MPEP § 608.01(b).
3. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double-spaced on good quality paper, and with page numbers and line numbers are required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: The phrase "address bits" in the disclosure is confusing. Proper English usage for this phrase, in the context where it is being used, suggests that the word "bits" be dropped. For instance, page 1, at the bottom of the page recites, "so this address bits signal must has [sic] enough fan-out power..." would be better understood if it read, "so this address signal must have enough fan-out power...". In this sentence, "bits" is dropped, and "has" is changed to "have". The examiner suggests that all phrases of "address bits" be changed to "address". The examiner similarly requests that the phrase "statistic data", when it appears in the disclosure, be changed to "statistical data". Appropriate correction is required.

5. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms that are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: the 2nd paragraph under Detailed Description of Invention 3rd line recites, "By not overvalue or undervalue the number..." is not proper English usage.

Claim Objections

6. The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

7. Claim 1 is objected to because of the following informalities: the examiner requests that the phrase "statistic data" be changed to "statistical data". Appropriate correction is required.
8. Claim 2 is objected to because of the following informalities: the examiner requests that the phrase "more than or equals to 0" be changed to "more than or equal to 0". Appropriate correction is required.
9. Claim 8 is objected to because of the following informalities: the examiner requests that wherever the phrase "address bits" appears in the claim, the phrase be changed to "address". Also, in the claim, page 2 line 4, the phrase "associate with" should read, "associated with". Appropriate correction is required.
10. Claim 9 is objected to because of the following informalities: the examiner requests that the phrase "the system read data" be changed to "the system reads data". Appropriate correction is required.
11. Claim 11 is objected to because of the following informalities: the phrase "address bits" in the claim is confusing. Proper English usage for this phrase, in the context where it is being used, suggests that the word "bits" be dropped. The examiner suggests that all phrases of "address bits" be changed to "address". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is indefinite, wherein step (d.) appears to the examiner to preserve an address of the fault memory pages and comparators. The examiner is led to understand that comparators are preserved, but the applicant does not indicate how this preservation is performed.

13. Claims 2-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are indefinite, wherein step (d.) of the independent Claim 1 appears to the examiner to preserve an address of the fault memory pages and comparators. The examiner is led to understand that comparators are preserved, but the applicant does not indicate how this preservation is performed.

14. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is generally narrative and indefinite, failing to conform to current U.S. practice. It appears to be a literal translation into English from a foreign document and is replete with grammatical and idiomatic errors, some of which have been previously objected to above. The examiner is unsure of the meaning of the 8th line where "a number" corresponds to a tolerant fault. And further, the examiner is unsure of "a encoder being provided to set up a repair address bits associate with a ...".

15. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 9 recites the limitation "the fault enable signal" in line 2. There is insufficient antecedent basis for this limitation in the claim.

16. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is indefinite, wherein the claim recites "a validation column". The examiner is unsure as to the meaning of this phrase, and the applicant does not further define it in the claim.

17. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 recites the limitation "the remapping address bits" in k. and l. There is insufficient antecedent basis for this limitation in the claim or the disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masaaki Sugimoto, U.S. Patent No. 6493654, and in view of Konrad Schonemann, U.S. Patent No. 6484277. Sugimoto teaches a method of dividing an integrated circuit into a number of elements, calculating the number and position of fault elements within the number of elements (see Abstract). However, Sugimoto does not apply the fault table created here to a memory self-repair system. But Schonemann, in column 1 lines 54-67 and column 2 lines 1- 58 does teach arranging several associate memories (activation units) and comparators (coding units) to preserve the address of the faults. And Sugimoto, in column 1 lines 43-51 states the advantage of providing redundancy in memories by reducing the supporting logic without reducing reparability. And one with ordinary skill in

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the art at the time of the invention, motivated as suggested by Shonemann, would combine the references so stated, and so the claim is rejected.

Allowable Subject Matter

19. Claims 2-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is an examiner's statement of reasons for allowance: Whereas the referenced art of Claim 1 teaches all requirements of that claim, the further limitations of Claims 2-7 designating range size being applied to partition units, and building the table into the memory chip are not taught. The prior arts of record in Claim 1 taken alone, or in combination failed to teach, anticipate, suggest, or render obvious the claimed invention or the method steps of the application. Specifically, the prior arts failed to teach, anticipate, suggest, or render obvious the limitations of Claims 2-7 designating range size being applied to partition units, and building the table into the memory chip.

20. Claims 8-10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. The following is a statement of reasons for the indication of allowable subject matter: Schonemann teaches A structure of repairing a SDRAM comprising: a plurality of address limiters being provided to restrict a address bits of a block (column 2 lines 15-24), a plurality of associate memories being provided to preserve the address bits of a fault memory page (column 2 lines 5-14), which corresponds to a tolerant fault of a

partition area; a plurality of comparator arrays being provided to compare an input address bits with an output address bits of an address limit to determine different ranges of memory address bits, decide whether any default exists, and generate a fault signal transferred to an encoder a encoder being provided to set up a repair address bits associate with a repair memory after receiving said fault signal; and a repair memory being provided to point a memory page address bits generated by said encoder to a new remapping address bits as to preserve the data (column 1 lines 55-67 and column 2 lines 1-4). Specifically, the prior arts taken alone, or in combination, failed to teach, anticipate, suggest, or render obvious the limitation of; when faults exceed a partition limit according to the slicing table of fault distribution, repairing the faults by using a fault limit of another partition with a lower fault rate. Consequently, in view of allowability of Claim 8, the dependent Claims 9 and 10, are allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

21. Claim 11 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. The following is a statement of reasons for the indication of allowable subject matter: The references of record teach a method of repairing an SDRAM (Phan column 5 lines 35-41) comprising:
a. booting a system (Barr column 17 lines 10-18); b. executing a memory test to find an address and distribution of a fault in the memory chip (Barr column 17 lines 10-18); e. inputting an address into the address limits and using comparator arrays to check whether an input address bits is in different address bits ranges according to a table of

fault (Schonemann column 1 lines 50-67 and column 2 lines 1-4) distribution; g. if there are no faults, mapping the input address bits to the SDRAM and reading data at the mapping address bits; h. if there are faults, a fault enable signal is generated, so that data at the original input address bits are not read and a fault signal is transferred to an encoder (Schonemann column 3 lines 40-58); i. using an encoder to set up a repair address bits for the fault (Schonemann column 3 lines 40-58); j. pointing a repair memory to a new remapping address according to the repair address; k. replacing the original input address with the remapping address; and l. reading data at the remapping address in the SDRAM (see Barr Abstract). Specifically, the prior arts taken alone, or in combination, failed to teach, anticipate, suggest, or render obvious the limitations of; if the fault distribution is in the planned range in advance, establishing the slicing table of fault distribution; or if the fault distribution is concentrated in a predetermined range, establishing the slicing table of fault distribution and posting address limits, and so the claim would be allowable if amended as stated above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P Trimmings whose telephone number is 703-305-0714. The examiner can normally be reached on weekdays, 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on 703-305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

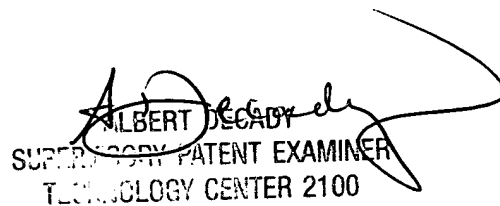
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John P Trimmings
Examiner
Art Unit 2133

jpt



GILBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100